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### Refrigeration and/or Freezer System

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The invention concerns a refrigeration and/or freezer system with at least two refrigeration and/or freezer units.

When several refrigeration and/or freezer systems are combined to form a cooling system (e.g., as a side-by-side solution), in known solutions the two units are controlled and operated separately and individually. For example, in the combination of a thermostat-controlled unit with a unit controlled by high-grade electronics, two aesthetically very different operating concepts stand side by side. Each unit has its own operating unit, a situation that leads to a large investment in equipment and a poor aesthetic appearance.

Alternative solutions provide for combination units that link the refrigeration and freezer units in a single refrigeration unit for both temperature ranges. A solution of this type is not very flexible, and takes up a great deal of space that cannot be adapted for existing spatial configurations.

It is the task of the within invention to create a refrigeration and/or freezer system that offers great flexibility at moderate cost.

This task is executed with a refrigeration and/or freezer system having the characteristics of claim 1. The sub-claims concern advantageous embodiments.

A refrigeration and/or freezer system according to the invention has a common operating unit for at least the two refrigeration or freezer units. A signal transmission device is provided for the transmission between the operating unit and at least two refrigeration or freezer units of signals to control said refrigeration and freezer units.

Operations are executed centrally via a single operating control element, to facilitate ease of operation. High-grade operating units, e.g. graphic displays, are needed in only one version, with resulting cost savings. If the refrigeration and/or freezer units are combined, they form one unit, even though they consist of two separate equipment units. Each equipment unit has its own refrigeration device, thereby facilitating individual operation.

In one advantageous embodiment, the individual units are free-standing and have their own individual electronics for controlling the unit in question. Only the operation is executed centrally, via an operating component.

The operating unit can be separate, and can be linked with the individual refrigeration and/or freezer units by means of appropriate signal transmission connections. However, it is particularly responsive and advantageous if the operating unit is integrated into one of the refrigeration and/or freezer units and the other units communicate with this equipment, which contains the operating unit, via signal transmission connections. In this way the first equipment unit can also be used separately and if appropriate can be expanded for use as a module by means of additional refrigeration and/or freezer units. Moreover, the integrated operating unit ensures a compact aesthetic appearance.

The individual refrigeration and/or freezer units can constitute different temperature areas of a cooling system. For example, the system can include one refrigeration unit and one freezer unit. Alternatively or additionally, an ice-cube-maker can be provided for one of the units. Thanks to flexible design of the system, various combinations can be devised and can be optimally adjusted to individual needs and space availability. In this case only a single operating unit is necessary, with corresponding cost savings.

Advantageously, signals are transmitted via a bus system, e.g. on the basis of a modified I<sup>2</sup> C bus.

Signals can be transmitted via appropriate cables inserted into connectors or sockets in the individual units. This facilitates easy installation and connection. According to another embodiment, the necessary control signals are transmitted through a wireless connection.

In an advantageous embodiment of the system, connectors or sockets are provided on each individual unit to facilitate a signal transmission connection when the individual units are pushed together. This space-saving embodiment is optically pleasing and easy to execute.

In an advantageous expansion of the refrigeration and/or freezer system according to the invention, the bus system also serves to transmit additional data, e.g. data about the contents of the individual units and their cooling parameters. This makes it possible to read all parameters of the individual refrigeration units on the common operating unit. If, for example, a system for monitoring the contents of the individual units is provided, the content data can also be called up on the central operating unit. Such systems include, for example, antennas integrated into the individual refrigeration units for the purpose of receiving signals from transponders attached to the stored items.

One embodiment of the refrigeration and/or freezer system according to the invention is explained in detail by means of the attached drawing, which shows:

**Figure 1:** A refrigeration and/or freezer system according to the invention, consisting of two units.

Figure 1 shows a cooling center with, for example, a refrigeration unit 1 and a freezer unit 3. The two units have doors 9 and 11, and each has its own power unit, which is not visible in the representation in Figure 1, and which serves to create low temperatures in the unit in question. An operating unit 7 having several operating elements and indicators, shown only schematically, is visible on refrigeration unit 1. Operating unit 7 is connected on the one hand with the control and power unit of refrigerator unit 1 for the purpose of their control. This is done inside the equipment and therefore is not visible in Figure 1. Additionally, operating unit 7 is connected with connector 13, which merely by way of example is shown in the lower rear of refrigeration unit 1. A signal transmission cable 5 is inserted into this connector; the other end of said signal transmission cable 5 is inserted into an appropriate connection unit of freezer unit 3. This signal transmission connection transmits signals from operating unit 7 via the connectors and the transmission cable 5 to the control unit or power unit of freezer unit 3 for the purpose of controlling freezer unit 3.

The number 14 designates another connector for connecting additional devices that can then be operated via operating unit 7.

The refrigeration and freezing unit is set up as follows. In the arrangement, the individual units 1, 3, are connected by means of cable connection 5 and connectors 13. The connection is easy to execute, and can be done by the end user. Operating unit 7 can now

operate refrigeration unit 1 and freezing unit 3. The individual parameters of refrigeration unit 1 and freezing unit 3, for example the temperature, can now be indicated on operating unit 7. With appropriate operating components, the temperature in the two pieces of equipment can be adjusted.

In an embodiment not illustrated, the connectors 13 or plugs of the individual pieces of equipment are designed in such manner that when the individual units are pushed together directly a signal-transmission connection is created. Additionally, an appropriate connector is provided on one equipment unit, and an appropriate plug is provided on the other equipment unit, which said connector and plug can mutually correspond. This eliminates the direct for a direct connection with cable 5. However, if the equipment units are to be used individually, they can also be connected by means of an appropriate cable connection.

If the equipment units are in separate areas, they can also be connected by means of, for example, a local bus communication system or a radio module.